

(or "merged") ATM cell. Unlike prior schemes of this type, the present apparatus and methods allow for including information indicative of the merging method used to create the merged cell to be included therein.

ATM or Asynchronous Transfer Mode is a switching technology that provides for communication over digital networks. Unlike the variable length packets used by frame relay and other services, ATM service is based on switching fixed length packets of data known as cells. Cell switching, as ATM is also called, is gaining popularity for a variety of reasons. First, switch architectures can be optimized to switch cells at much higher speeds than variable length packets. Second, multiple services requiring a variety of quality of service guarantees can be provided simultaneously.

Although the use of fixed length cells in ATM can be efficient in terms of allowing standardized switching apparatus to be used, for many applications (e.g., the transport of compressed voice as in telephony applications) the standard 53-byte cell provides too large a package for the data requiring transport through the network. As a result, much of the cell payload is merely "padding" and the transport of such padding wastes the available bandwidth of the ATM network.

Although several approaches to solve this problem may be available (e.g., the use shorter or variable length cells) it appears that a scheme wherein multiple payloads from other, partially filled cells are packed into one cell at a source and then later pulled apart at a destination offers particular promise. As noted in the present application, the ATM Forum has begun discussions regarding such bundling of data channels within a single cell. Further, one reference cited by the Examiner during prosecution of this application (Takashima, U.S. Patent 5,509,007) proposes such a scheme wherein the "merged" cell is made up of a number of fixed length portions to accommodate information from two or more partially filled cells. However, none of these schemes allow for including information regarding the merging method used to create the merged cell to be included in the merged cell itself.

B. Claims 1, 14 and 21 were Previously Amended to Obviate the Objections

In the preliminary amendment filed December 14, 1999, claims 1, 14 and 21 were amended

to recite "a merging method used". Apparently, this amendment was ignored because the final office action fails to acknowledge it. Because of these previous amendments, no further amendment is needed and the claims are not objectionable for failure to include proper antecedent basis.

C. The Claims are Patentable Over Takashima

The present claims are patentable over Takashima. Although it does appear that Takashima discloses the merging of two or more ATM cells into a new ATM cell (e.g., at Fig 15 and the accompanying description), there does not appear to be any teaching or suggestion of including information indicative of a merging method so used in the header of the new ATM cell as presently claimed. Instead, Takashima apparently allocates header information to indicate the number of merged cells or the data boundaries of those cells. See, e.g., Takashima at col. 10, ll. 21-31.

This feature of including information indicative of a merging method being used is also supported by the specification. Indeed, several examples of possible merging methods are described at page 8 of the specification. In one example, fixed positions for n, 48/n-byte sub-cells are reserved. See, specification at p. 8, ll. 11-16. In another example, an indexing scheme for multiple sub-cells of different lengths is described. This may include variations where an HEC byte is used or not; a limited VPI/VCI field is used or not; or an error control byte is used or not. See specification at p. 8, ll. 17-25. Thus multiple different methods may be used and the VCI of the merged cell may be used to indicate the number of cells included in a filled cell, specification at p. 8, l.26 - p. 9, l. 4, or other information in the cell may be used to indicate the number of cells so merged and/or the cell delineation boundaries, etc. Specification at p. 7, l. 25 - p. 8, l. 2.

In short, the specification contemplates the use of any of a variety of merging methods and further describes ways in which the information regarding the merging method may be included in the filled cell. Therefor, because the claimed subject matter is supported by a specification that does describe the material in such a way as to reasonably convey to one of ordinary skill in the art that the inventors were in possession of the invention at the time the application was filed, and because the cited prior art fails to teach or suggest such claimed subject matter, the present claims are patentable

over that art.

D. The Specification Provides a Disclosure which Would Reasonable Convey to One of Ordinary Skill in the Art that the Inventors Were in Possession of the Invention

The objections to the specification under 35 U.S.C. 112, first paragraph, are respectfully traversed. As discussed above, the claimed feature of a cell including information indicative of a merging method used is more than adequately disclosed in the present application. Accordingly, these rejections should be removed.

E. Claims 21, 22 and 26 Are Directed to Statutory Subject Matter

The rejection of claims 21, 22 and 26 under 35 U.S.C. 101 is respectfully traversed. The rejection implies that an ATM cell cannot be patentable subject matter. Although the undersigned recognizes that the Patent Office has adopted a policy of denying patentability to data structures, per se, it is respectfully submitted that the claimed ATM cells do not fall within this category.

An ATM cell is a combination of information descriptions or representations organized to carry useful information between ATM devices (e.g., computer systems, switches, and the like). Rather than mere "functional descriptive material", an ATM cell is a specific arrangement of information elements, assembled by computer processes under associated program control (as may exist, for example, in a segmentation engine). These information elements are not simply abstract ideas, they are unique sequences of bits (usually represented as electrical or sometimes optical signals) that exist within and among computer systems, with each bit sequence specifically identifying and representing an address, control information or user data information. Thus, the contents of an ATM cell are real, tangible things, and thus the cell itself (i.e., the arrangement of these things in an ordered form) should qualify as patentable subject matter.

Moreover, in programming, the term *data structure* refers to "a scheme for organizing related pieces of information." See, e.g., the Webopedia maintained by ZDNet, available at http://www.zdwebopedia.com/TERM/d/data_structure.html. "Schemes" are generally defined as

carefully arranged and systematic programs of action for attaining some object or end; or orderly combinations of things on a definite plan or system. See, e.g., Webster's New World Dictionary, Second College Edition (1982). Thus, the plain meaning of the term data structure is a combination of related pieces of information. There can be no doubt that a "combination of things" is patentable subject matter under 35 U.S.C. 101, thus there does not appear to be any reason why a combination of related pieces of information should not be likewise patentable.

The final office action cites noting in support of the proposition that an ATM cell is not statutory subject matter and instead merely offers a "disagreement" with the above analysis. Such a conclusory statement is insufficient to deny patentability and this rejection should be removed.

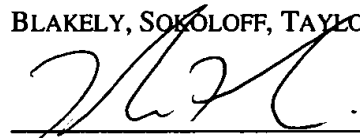
Please charge any deficiencies of fees associated with this communication to our Deposit Account No. 02-2666.

Respectfully submitted,

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